

Sphingomonas ORF1

ATG	ACC	GAT	CCA	CGT	CAG	CTG	CAC	CTG	GCC	GGG	TTC	TTC	TGT	GCC	GGC	AAC	GTC	ACG	CAC
M	T	D	P	R	Q	L	H	L	A	G	F	F	C	A	G	N	V	T	H>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
90																			
GCC	CAC	GGG	GGG	TGG	CAC	GCC	GAC	TCC	AAC	GGC	TTC	TTC	CTG	ACC	AAG	GAG	TAC	TAC	
A	H	G	A	W	R	H	A	D	D	S	N	G	F	L	T	K	E	Y	Y>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
150																			
CAG	CTG	ATT	GCC	CGC	ACG	CTC	GAG	CGC	GGC	AAG	TTC	GAC	CTG	TTC	CTT	CCC	GAC	GGG	
Q	Q	I	A	R	T	L	E	R	G	K	F	D	I	L	F	L	P	D	A>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
210																			
CTC	GCC	GTG	TGG	GAC	ACC	TAC	GGC	GAC	AAT	CTG	GAG	ACC	GGT	CTG	CGG	TAT	GGC	GGG	CAA
L	A	V	W	D	S	Y	G	D	N	L	E	T	G	L	R	Y	G	G	Q>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
270																			
GGC	GCG	GTG	ATG	CTG	GAG	CCC	GGC	GTA	GTT	ATC	GCC	GGG	ATG	GCC	TGC	ACC	GAA	CAT	
G	A	V	M	L	B	P	G	V	V	I	A	A	M	A	S	V	T	E	H>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
330																			
CTG	GGG	CTG	GGC	ACC	ATT	TCC	ACC	TAC	TAC	CCG	CCC	TAC	CAT	GTA	GCC	CGG	GTC	CTC	
L	G	L	G	A	T	I	S	T	T	Y	Y	P	P	Y	H	V	A	R	V>
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
390																			
GTC	GCT	TCG	CTG	GAC	CAG	CTG	TCC	TCC	GGG	CGA	GTG	TCA	TGG	AAC	GTC	GTG	ACC	TCG	CTC
V	A	S	L	D	Q	L	S	S	G	R	V	S	W	N	V	T	S	L>	

FIGURE 1A

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Sphingomonas ORF1 (cont)

FIGURE 1B

Sphingomona s. orf1 (cont.)

FIGURE 1C

Sphingomonas ORF1 (cont)

ATC CTG CAG CAC CGC GGA CTG TTC CGC ACT GAT TAC GAA GGC CGC ACC CTG CGC AGC CAT I L Q H R G L F R T D Y E G R T L R S H >	1290 * * * * *	1350 * * * * *
CTG GGA CTG CGT GAA CCC GCA TAC CTG GGA GAG TAC GCA TGA L G L R E P A Y L G E Y A >		

FIGURE 1D

Sphingomonas ORF2

					30
					60
A	T	G	A	C	
M	T	T	D	I	H
					90
			*	*	
A	C	T	A	G	C
T	Y	S	N	C	P
					120
			*	*	
A	C	T	A	G	C
T	Y	S	P	V	N
			*	*	150
			*	*	
G	A	C	G	G	C
D	S	A	G	I	T
			*	*	180
			*	*	
G	A	T	A	C	T
D	S	A	G	I	T
			*	*	210
			*	*	
T	A	G	C	G	T
Y	D	R	D	Y	T
			*	*	240
			*	*	
T	A	G	C	G	T
Y	D	R	D	Y	T
			*	*	270
			*	*	
C	T	G	G	G	C
L	R	A	P	G	R
			*	*	300
			*	*	
C	T	G	G	G	C
L	R	A	T	L	G
			*	*	330
			*	*	
T	A	G	C	G	T
Y	F	V	R	G	D
			*	*	360
			*	*	
G	G	A	T	C	G
G	V	S	D	S	A
			*	*	420
			*	*	
G	G	T	T	C	G
G	V	S	D	S	A

FIGURE 2A

Sphingomonas ORF2 (cont)

GAT CCC TGG CCG CAG ACC CTG GTC GCG CTG GGC ACA TGG GAG CGT GCC TTT CTG AGC D P W R Q T L V A L G T W E A R A L L S>	450 * * * *
ACG CTC GAG ACG GCG GGG CTT GGC GTC GGC GAC GTC GAG CTG ACG CGC ATC GAG AAC CCG T L E T A G L G V D V E L T R I E N P>	510 * * * *
TTC GTC GAC GTG CCG ACC GAA CGA CTG CAT GCC GCC EGC TGC CTC AAA GGA ACC GAC CTG F V D V P T E R L H A A G S L K G T D L>	570 * * * *
TTC CCC GAC GTC ACC AGC CAG CAG GGC GCA GTC CTT GAG GAT GAG CGC GCC GAC GCC CTG F P D V T S Q A V L E D E R A D A L>	630 * * * *
TTC GCG TGG CTT CCC TGG GCC GAG CTC GAG ACC CGC ATC CGT GCA CGG CCG GTC CTA F A W L P W A A E L E T R I G A R P V L>	690 * * * *
GAC CTC AGC GCA GAC CGC AAT GCC TAT GCG AGC ACC TGG ACG GTG AGC GCC GAG CTG D L S A D D R N A Y A S T W T V S A E L>	750 * * * *
GTG GAC CGG CAG CCC GAA CTG GTG CAG CGG CTC GTC GAT GCC GTG GAT GCA GGC CGG V D R Q P E L V Q R L V D A V V D A G R>	810 * * * *
	840 * * * *

FIGURE 2B

Sphingomonas ORF2 (cont.)

FIGURE 2C

Sphingomonas ORF3

	10	*	20	*	30	*	40	*	50	*	60	*	
ATG	AAC	GAA	CTC	GTC	AAA	GAT	CTC	GGC	CTC	AAT	CGA	TCC	
M	N	E	L	V	K	D	L	G	L	N	R	S	
									D	P	I	G	
									R	S	A	V	
									D	R	A	G	
									R	D	G	S	
									A	S	A	>	
70	*	70	*	80	*	90	*	100	*	110	*	120	*
CGA	CTG	GCC	GCG	CAG	TGG	GGG	GCC	ACC	GCT	GTT	GAT	CGG	GGC
R	L	A	A	Q	W	G	A	T	A	V	D	R	G
											D	R	A
											G	G	S
											A	A	>
130	*	130	*	140	*	150	*	160	*	170	*	180	*
ACC	GCC	GAA	CTC	GAT	CAA	CTG	CGC	GGC	AGC	GGC	CTG	CTC	TCC
T	A	E	L	D	Q	L	R	G	S	G	L	L	S
											I	P	A
											A	A	>
190	*	190	*	200	*	210	*	220	*	230	*	240	*
TAT	GGC	GGC	TGG	GGC	GCC	GAC	TGG	CCA	ACG	ACT	CTG	GAA	GTT
Y	G	G	W	G	A	D	W	P	T	T	L	E	V
											I	R	E
											V	A	T
											A	A	>
250	*	250	*	260	*	270	*	280	*	290	*	300	*
GTG	GAC	GGA	TCG	CTG	GCG	CAT	CTA	TTC	GGC	TAC	CAC	CTC	GGC
V	D	G	S	L	A	H	L	F	G	Y	H	L	G
											C	V	P
											M	I	E
310	*	310	*	320	*	330	*	340	*	350	*	360	*
CTG	TTC	GGC	TCG	GCG	CCA	AAG	GAA	CGG	CTG	TAC	CGC	CAG	ATC
L	F	G	S	A	P	Q	K	E	R	L	Y	R	Q
											I	A	S
											H	H	D
											W	W	>
370	*	370	*	380	*	390	*	400	*	410	*	420	*
CGG	GTC	GGG	AAT	GCG	TCG	AGC	GAA	AAC	AGC	CAC	GTG	CTC	GAG
R	V	G	N	A	S	S	E	N	N	S	H	V	L
											E	W	K
											L	A	A
											A	A	>

FIGURE 3A

Sphingomonas ORF3 (cont)											
430	*	440	*	450	*	460	*	470	*	480	*
ACC	GCC	GTC	GAT	GAT	GGC	GGG	TTC	GTC	CTC	AAC	GGC
T	A	V	D	D	G	G	F	V	L	N	G
K	S	S	D	L	L	I	V	F	G	V	I
490	*	*	*	*	*	*	*	*	*	*	*
AAA	AGC	TCC	GAC	CTG	CTG	ATC	GTG	TTC	GGC	GTG	ATC
A	I	T	A	V	I	P	T	D	R	A	G
550	*	*	*	*	*	*	*	*	*	*	*
GGG	ATC	ATC	ACC	GGC	GTC	ATT	CCC	ACC	GAC	GGG	GCC
A	I	I	T	A	V	I	P	T	D	R	V
610	*	*	*	*	*	*	*	*	*	*	*
CGC	GCA	ATC	GGG	ATG	CGC	CAG	ACC	GAC	AGC	GGC	GAA
R	A	I	G	M	R	Q	T	D	S	G	S
670	*	*	*	*	*	*	*	*	*	*	*
TAC	CCA	GAC	GAG	ATC	TTC	GGG	GCA	CCA	AAC	TCA	GTC
Y	P	D	E	I	L	G	A	P	N	S	V
730	*	*	*	*	*	*	*	*	*	*	*
CGC	GGC	AGC	TGG	ACG	CCG	GCG	ATT	CAG	TCG	TAT	CTG
R	G	S	L	W	T	P	A	I	Q	S	I
790	*	*	*	*	*	*	*	*	*	*	*
CGG	CGT	GGC	GGC	CTC	GAG	GCG	GCA	GCG	GAT	TAC	AGC
A	R	G	A	L	E	A	A	D	Y	T	R

FIGURE 3B

Sphingomonas ORF3 (cont)

	850	*	860	*	870	*	880	*	890	*	900	*
CCC	GCC	GGC	GTC	GCG	AAG	GCG	ACA	GAG	GAT	CCC	CAC	ATC
P	A	G	V	A	K	A	T	E	D	A	T	TAC
												GGT
910	*	*	920	*	930	*	940	*	950	*	960	*
GCG	ATC	GCG	CTC	CAG	GGC	GGC	GCG	GCG	GCG	GTC	GCG	GCC
A	I	A	L	Q	G	A	E	A	A	R	E	CTG
												CAA
970	*	*	980	*	990	*	1000	*	1010	*	1020	*
GCG	TGG	GAC	AAG	GGC	GAT	GCG	GTC	ACG	CCC	GAA	GAG	CGC
A	W	D	K	G	D	A	V	T	P	E	E	CGC
												CAG
1030	*	*	1040	*	1050	*	1060	*	1070	*	1080	*
TCG	GGT	GTG	AAG	GCC	CTC	TCG	ACG	AAG	GCC	CTC	GAC	ATC
S	G	V	K	A	L	S	T	K	A	L	D	I
												T
1090	*	*	1100	*	1110	*	1120	*	1130	*	1140	*
ACA	ACG	GGC	TCG	CGA	TCG	ACG	CAT	CCC	AGA	TAC	GGA	TTC
T	T	G	S	R	S	T	H	P	R	Y	G	F
												D
1150	*	*	1160	*	1170	*	1180	*	1190	*	1200	*
CGG	ACT	CAT	ACG	CTG	CAC	GAT	CCG	GTA	TCG	TAT	AAA	ATC
R	T	H	T	L	H	D	P	V	S	Y	K	I
												V
1210	*	*	1220	*	1230	*						
CTC	AAC	GGG	ACA	TTC	CCG	GTT	CCC	GGA	TTT	ACG	TCA	ACG
L	N	G	T	F	P	V	P	G	F	T	S>	

FIGURE 3C

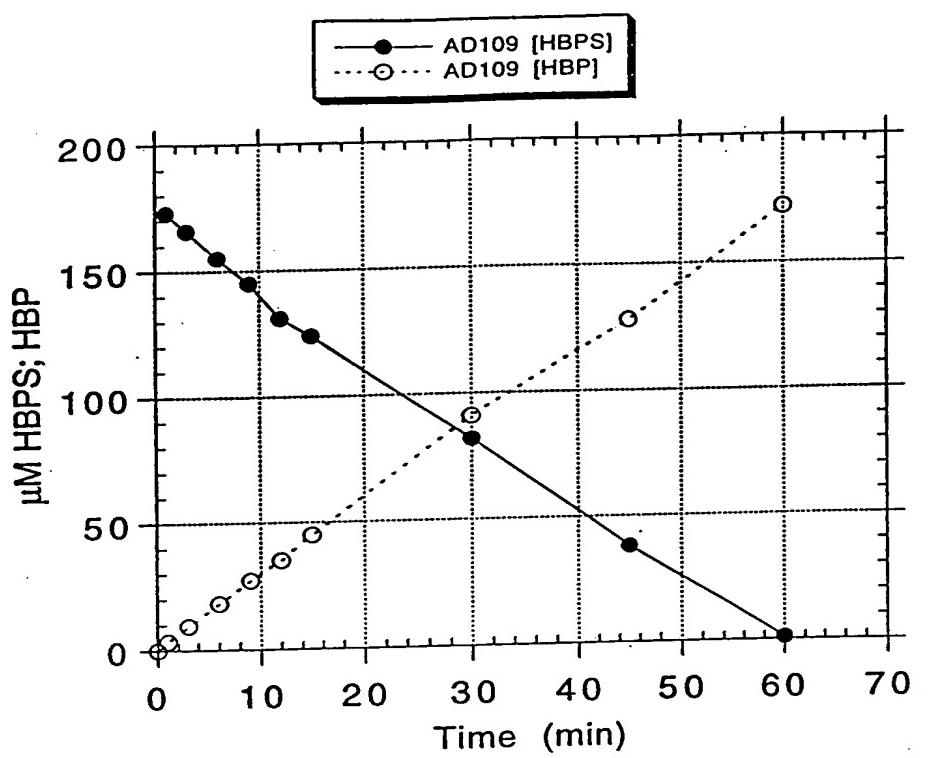


FIGURE 4

200 bp

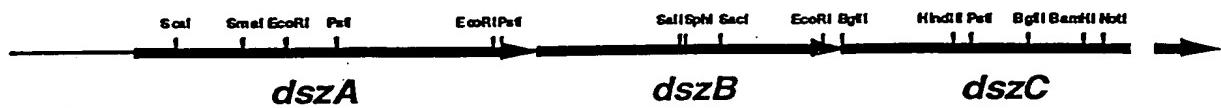


FIGURE 5

Sphingomonas dsz sequence

10	20	30	40	50	60
*	*	*	*	*	*
GGTTCGAGAT CGATCTGACC GTCGAACCCG GCGCGGTTCA AACCATCCTC TGGGGCCTCT					
CCAAGCTCTA GCTAGACTGG CAGCTTGGGC CGCGCCAAGT TTGGTAGGAG ACCCCGGAGA					
70	80	90	100	110	120
*	*	*	*	*	*
TCTTGCACCT GACATAGGAA TCTCTACTAA ATAAATAGAT ATTTATTGCA CACTAAGTTC					
AGAACGTGAA CTGTATCCTT AGAGATGATT TATTATCTA TAAATAAGCT GTGATTCAAG					
130	140	150	160	170	180
*	*	*	*	*	*
GGTGATCAGG CCGACCGTGT GTCTCAAGTG CTCGCTCCGG GTTGCCACGA GCTAAAGCGC					
CCACTAGTCC GGCTGGCAC AAGAGTTCAC GAGCGAGGCC CAACGGTGCT CGATTCGCG					
190	200	210	220	230	240
*	*	*	*	*	*
GCGATGCTGG GGCGACAGCG CTAGGCATTG CGTTCCCTCA CACCAATGAT GAGATGATAC					
CGCTACGACC CCGCTGTCGC GATCCGTAAC GCAAGGGAGT GTGGTTACTA CTCTACTATG					
250	260	270	280	290	300
*	*	*	*	*	*
GATGCGCATG ACCACTATCC GCACCTAGCA CGAAAGATCC GTGCATTTCG CGAATGCCAA					
CTACCGTAC TGGTGATAGG CGTGGATCGT GCTTTCTAGG CACGTAAAGC GCTTACGGTT					
310	320	330	340	350	360
*	*	*	*	*	*
TGAAGAGGAC CGACGTACGG CAGCTTCCTA CGCTTTCGCG CCATCGTTCA TAGCCAAGGT					
ACTTCTCCTG GCTGCATGCC GTCGAAGGAT GCGAAAGCGC GGTAGCAAGT ATCGGTTCCA					
370	380	390	400	410	420
*	*	*	*	*	*
CTTTTCGACG CCGGTTCGCG TGGGCGACTG ACGGGGGTAG CGCCGCGACT ATTGTTTCA					
GAAAAGCTGC GGCCAAGCGC ACCCGCTGAC TGCCGCCATC GCGGCGCTGA TAAGCAAAGT					
430	440	450	460	470	480
*	*	*	*	*	*
AACTCACGAG GATAAGAGCC TATGACCGAT CCACGTCAGC TGCACCTGGC CGGATTCTTC					
TTGAGTGCTC CTATTCTCGG ATACTGGCTA GGTGCAGTCG ACGTGGACCG GCCTAACAGAG					
490	500	510	520	530	540
*	*	*	*	*	*
TGTGCCGGCA ACGTCACCGCA CGCCCACCGA GCGTGGCGCC ACGCCGACGA CTCCAACGGC					
ACACGGCCGT TGCAGTGGCGT GCGGGTGCCT CGCACCGCGG TGCGGCTGCT GAGGTTGCCG					
550	560	570	580	590	600
*	*	*	*	*	*
TTCCTCACCA AGGAGTACTA CCAGCAGATT GCGCGCACGC TCGAGCGCGG CAAGTTCGAC					
AAGGAGTGGT TCCTCATGAT GGTGCGTCAA CGGGCGTGCAG AGCTCGCGCC GTTCAAGCTG					

FIGURE 6A

Sphingomonas dsz sequence (page 2)

610	620	630	640	650	660
*	*	*	*	*	*
CTGCTGTTCC TTCCCGACGC GCTCGCCGTG TGGGACAGCT ACGGCACAA TCTGGAGACC					
GACGACAAGG AAGGGCTGCG CGAGCGGCAC ACCCTGTCGA TGCCGCTGTT AGACCTCTGG					
670	680	690	700	710	720
*	*	*	*	*	*
GGTCTGCGGT ATGGCGGGCA AGGCGCGGTG ATGCTGGAGC CCGGCGTAGT TATCGCCGCG					
CCAGACGCCA TACCGCCCCGT TCCCGGCCAC TACGACCTCG GGCCGCATCA ATAGCGGCAC					
730	740	750	760	770	780
*	*	*	*	*	*
ATGGCCTCGG TGACCGAACAA TCTGGGGCTG GGCGCCACCA TTTCCACCCAC CTACTACCCG					
TACCGGAGCC ACTGGCTTGT AGACCCCCGAC CCGCGGTGGT AAAGGTGGTG GATGATGGGC					
790	800	810	820	830	840
*	*	*	*	*	*
CCCTTACCATG TAGCCCGGGT CGTCGCTTCG CTGGACCAGC TGTCCCTCCGG GCGAGTGTG					
GGGATGGTAC ATCGGGCCCA GCAGCGAACG GACCTGGTCG ACAGGAGGCC CGCTCACAGC					
850	860	870	880	890	900
*	*	*	*	*	*
TGGAACGTGG TCACCTCGCT CAGCAATGCA GAGGCGCGCA ACTTCGGCTT CGATGAACAT					
ACCTTGCACC AGTGGAGCGA GTCGTTACGT CTCCGCGCGT TGAAGCCGAA GCTACTTGTA					
910	920	930	940	950	960
*	*	*	*	*	*
CTCGACACG ATGCCCGCTA CGATCGCGCC GATGAATTCC TCGAGGTCGT GCGCAAGCTC					
GAGCTGGTGC TACGGGCGAT GCTAGCGCGG CTACTTAAGG AGCTCCAGCA CGCGTTCGAG					
970	980	990	1000	1010	1020
*	*	*	*	*	*
TGGAACAGCT GGGATCGCGA TGCGCTGACA CTCGACAAGG CAACCGGCCA GTTCGCCGAT					
ACCTTGTGCA CCCTAGCGCT ACGCGACTGT GAGCTGTTCC GTTGGCCGGT CAAGCGGCTA					
1030	1040	1050	1060	1070	1080
*	*	*	*	*	*
CCGGCTAAGG TGCGCTACAT CGACCACCGC GGCAGATGGC TCAACGTACG CGGGCCGCTT					
GGCCGATTCC ACGCGATGTA GCTGGTGGCG CCGCTTACCG AGTTGCATGC GCCCGGGCGAA					
1090	1100	1110	1120	1130	1140
*	*	*	*	*	*
CAGGTGCCGC GCTCCCCCCA GGGCGAGCCT GTCATTCTGC AGGCCGGGCT TTCGGCGCGG					
GTCCACGGCG CGAGGGGGGT CCCGCTCGGA CAGTAAGACG TCCGGCCCGA AAGCCCGGCC					
1150	1160	1170	1180	1190	1200
*	*	*	*	*	*
GGCAAGCGCT TCGCCGGCG CTGGGCGGAC GCGGTGTTCA CGATTCGCC CAATCTGGAC					
CCGTTCGCGA AGCGGCCCGC GACCCGCCTG CGCCACAAAGT GCTAAAGCGG GTTAGACCTG					

FIGURE 6B

Sphingomonas dsz sequence (page 3)

1210	1220	1230	1240	1250	1260
*	*	*	*	*	*
ATCATGCAGG CCACGTACCG CGACATAAAG GCGCAGGTCTG AGGCCGCCGG ACGCGATCCC					
TAGTACGTCC GGTGCATGGC GCTGTATTC CGCGTCCAGC TCCGGCGGCC TGCGCTAGGG					
1270	1280	1290	1300	1310	1320
*	*	*	*	*	*
GAGCAGGTCA AGGTGTTGC CGCGGTGATG CCGATCCTCG GCGAGACCGA GGCGATCGCC					
CTCGTCCAGT TCCACAAACG GCGCCACTAC GGCTAGGAGC CGCTCTGGCT CCGCTAGCGG					
1330	1340	1350	1360	1370	1380
*	*	*	*	*	*
AGGCAGCGTC TCGAATACAT AAATTGCGTG GTGCATCCCC AAGTCGGGCT TTCTACGTTG					
TCCGTCGCAG AGCTTATGTA TTTAAGCGAC CACGTAGGGC TTCAGCCCCGA AAGATGCAAC					
1390	1400	1410	1420	1430	1440
*	*	*	*	*	*
TCCAGCCATG TCGGGGTCAA CCTTGCCGAC TATTCGCTCG ATACCCCCGCT GACCAGGGT					
AGGTCGGTAC AGCCCCAGTT GGAACGGCTG ATAAGCGAGC TATGGGGCGA CTGGCTCCAG					
1450	1460	1470	1480	1490	1500
*	*	*	*	*	*
CTGGGGGATC TCGCCCAGCG CAACGTGCC ACCCAAATGG GCATGTTCGC CAGGATGTTG					
GACCCGCTAG AGCGGGTCGC GTTGACAGGG TGGGTTGACC CGTACAAGCG GTCCTACAAC					
1510	1520	1530	1540	1550	1560
*	*	*	*	*	*
CAGGCCGAGA CGCTGACCGT GGGAGAAATG GGCCGGCGTT ATGGCGCCAA CGTGGGCTTC					
GTCCGGCTCT GCGACTGGCA CCCTCTTAC CGGGCCGCAA TACCGCGGTT GCACCCGAAG					
1570	1580	1590	1600	1610	1620
*	*	*	*	*	*
GTCCCGCAGT GGGCGGGAAC CCGCGAGCAG ATCGCGGACC TGATCGAGAT CCATTCTAACAG					
CAGGGCGTCA CCCGCCCTTG GGCGCTCGTC TAGCGCCTGG ACTAGCTCTA GGTAAAGTTC					
1630	1640	1650	1660	1670	1680
*	*	*	*	*	*
GCCGGCGGCG CCGATGGCTT CATCATCTCG CGGGCGTTCC TGCCCGGATC TTACGAGGAA					
CGGCCGCGCG GGCTACCGAA GTAGTAGAGC GGCGCAAGG ACAGGGCTAG AATGCTCCTT					
1690	1700	1710	1720	1730	1740
*	*	*	*	*	*
TTCGTCGATC AGGTGGTGCC CATCCTGCAG CACCGCGGAC TGTTCCGCAC TGATTACGAA					
AAGCAGCTAG TCCACCACGG GTAGGACGTC GTGGCGCCTG ACAAGGCGTG ACTAATGCTT					
1750	1760	1770	1780	1790	1800
*	*	*	*	*	*
GGCCGCACCC TGCGCAGCCA TCTGGGACTG CGTGAACCCG CATACTGGG AGAGTACGCA					
CGGGCGTGGG ACGCGTCGGT AGACCCCTGAC GCACTTGGGC GTATGGACCC TCTCATGCGT					

FIGURE 6C

Sphingomonas dsz sequence (page 4)

1810	1820	1830	1840	1850	1860
*	*	*	*	*	*
TGACGACAGA CATCCACCCG GCGAGCGCCG CATCGTCGCC GGCGGCGCGC GCGACGATCA					
ACTGCTGTCT GTAGGTGGC CGCTCGCGC GTAGCAGCGG CCGCCGCGCG CGCTGCTAGT					
1870	1880	1890	1900	1910	1920
*	*	*	*	*	*
CCTACAGCAA CTGCCCCGTG CCTAATGCC TGCTCGCCGC GCTCGGCTCA GGTATTCTGG					
GGATGTCGTT GACGGGGCAC GGATTACGGG ACGAGCGCG CGAGCCGAGT CCATAAGACC					
1930	1940	1950	1960	1970	1980
*	*	*	*	*	*
ACAGTGCCGG GATCACACTT GCCCTGCTGA CCGGAAAGCA GGGCGAGGTG CACTTCACCT					
TGTCA CGGCC CTAGTGTGAA CGGGACGACT GGCCTTCGT CCCGCTCCAC GTGAAGTGGA					
1990	2000	2010	2020	2030	2040
*	*	*	*	*	*
ACGACCGAGA TGACTACACC CGCTCGGCCG GCGAGATTCC GCCGCTGGTC AGCGAGGGAC					
TGCTGGCTCT ACTGATGTGG GCGAAGCCGC CGCTCTAAGG CGGCGACCAG TCGCTCCCTG					
2050	2060	2070	2080	2090	2100
*	*	*	*	*	*
TGC GTGCCG GGGCGGGACC CGCCTGCTGG GACTGACGCC GGTGCTGGGC CGCTGGGCT					
ACGCACGCCG CCCC GCCTGG CGGGACGACC CTGACTGCCG CCACGACCCCG GCGACCCCGA					
2110	2120	2130	2140	2150	2160
*	*	*	*	*	*
ACTTCGTCCG GGGCGACAGC GCGATCCGCA CCCC GGCGCA TCTTGCCGGC CGCCGCGTCG					
TGAAGCAGGC CCCGCTGTGCG CGCTAGGCGT GGGGCCGGCT AGAACGGCCG GCGCGCAGC					
2170	2180	2190	2200	2210	2220
*	*	*	*	*	*
GAGTATCCGA TTCGGCCAGG AGGATATTGA CCGGAAGGCT GGGCGACTAC CGCGAACTTG					
CTCATAGGCT AAGCCGGTCC TCCTATAACT GGCCTTCCGA CCCGCTGATG GCGCTTGAAC					
2230	2240	2250	2260	2270	2280
*	*	*	*	*	*
ATCCC TGGCG CGAGACCCCTG GTCGCGCTGG GGACATGGGA GGGCGGTGCC TTGCTGAGCA					
TAGGGACCGC CGTCTGGGAC CAGCGCGACC CCTGTACCCCT CCGCGCACGG AACGACTCGT					
2290	2300	2310	2320	2330	2340
*	*	*	*	*	*
CGCTCGAGAC GGC GGGGCTT GGC GCGCCG AC GTCGAGCT GAC GCGC ATC GAGAACCGT					
GCGAGCTCTG CCGCCCCGAA CCGCAGCCGC TGCAGCTCGA CTGCGCGTAG CTCTTGGCA					
2350	2360	2370	2380	2390	2400
*	*	*	*	*	*
TCGTCGACGT GCGGACCGAA CGACTGCATG CCGCCGGCTC GCTCAAAGGA ACCGACCTGT					
AGCAGCTGCA CGGCTGGCTT GCTGACGTAC GGC GGGCCGAG CGAGTTTCCT TGGCTGGACA					

FIGURE 6D

Sphingomonas dsz sequence (page 5)

2410	2420	2430	2440	2450	2460
*	*	*	*	*	*
TCCCCGACGT GACCAGCCAG CAGGCCGCAG TCCTTGAGGA TGAGCGCGCC GACGCCCTGT					
AGGGGCTGCA CTGGTCGGTC GTCCGGCGTC AGGAACTCCT ACTCGCGCGG CTGCGGGACA					
2470	2480	2490	2500	2510	2520
*	*	*	*	*	*
TCGCGTGGCT TCCCCTGGCG GCCGAGCTCG AGACCCGCAT CGGTGCACGG CCGGTCCTAG					
AGCGCACCGA AGGGACCCGC CGGCTCGAGC TCTGGCGTA GCCACGTGCC GGCCAGGATC					
2530	2540	2550	2560	2570	2580
*	*	*	*	*	*
ACCTCAGCGC AGACGACCGC AATGCCTATG CGAGCACCTG GACGGTGAGC GCCGAGCTGG					
TGGAGTCGCG TCTGCTGGCG TTACGGATAAC GCTCGTGGAC CTGCCACTCG CGGCTCGACC					
2590	2600	2610	2620	2630	2640
*	*	*	*	*	*
TGGACCGGC ACCCCGAACTG GTGCAGCGGC TCGTCGATGC CGTGGTGGAT GCAGGGCGGT					
ACCTGGCCGT CGGGCTTGAC CACGTCGCCG AGCAGCTACG GCACCCACCTA CGTCCCGCCA					
2650	2660	2670	2680	2690	2700
*	*	*	*	*	*
GGGCCGAGGC CAATGGCGAT GTCGTCTCCC GCCTGCACGC CGATAAACCTC GGTGTCAGTC					
CCCGGCTCCG GTTACCGCTA CAGCAGAGGG CGGACGTGCG GCTATTGGAG CCACAGTCAG					
2710	2720	2730	2740	2750	2760
*	*	*	*	*	*
CCGAAAGCGT CCGCCAGGGA TTCGGAGCCG ATTTTCACCG CCGCCTGACG CCGCGGCTCG					
GGCTTCGCA GGCGGTCCCT AAGCCTCGGC TAAAAGTGGC GGCGGACTGC GGCGCCGAGC					
2770	2780	2790	2800	2810	2820
*	*	*	*	*	*
ACAGCGATGC TATGCCATC CTGGAGCGTA CTCAGCGGTT CCTGAAGGAT GCGAACCTGA					
TGTGCTACG ATAGCGGTAG GACCTCGCAT GAGTCGCCAA GGACTTCCTA CGCTTGGACT					
2830	2840	2850	2860	2870	2880
*	*	*	*	*	*
TCGATCGGTC GTTGGCGCTC GATCGGTGGG CTGCACCTGA ATTCCCTCGAA CAAAGTCTCT					
AGCTAGCCAG CAACCGCGAG CTAGCCACCC GACGTGGACT TAAGGAGCTT GTTTCAGAGA					
2890	2900	2910	2920	2930	2940
*	*	*	*	*	*
CACGCCAGGT CGAAGGGCAG ATAGCATGAA CGAACTCGTC AAAGATCTCG GCCTCAATCG					
GTGCGGTCCA GCTTCCCGTC TATCGTACTT GCTTGAGCAG TTTCTAGAGC CGGAGTTAGC					
2950	2960	2970	2980	2990	3000
*	*	*	*	*	*
ATCCGATCCG ATCGGCGCTG TCGGGCGACT GGCGCGCGAG TGGGGGGCCA CCCGTGTTGA					
TAGGCTAGGC TAGCCGCGAC ACCCGCGCTGA CGGGCGCGTC ACCCCCCCGGT GGCGACAACT					

FIGURE 6E

Sphingomonas dsz sequence (page 6)

3010	3020	3030	3040	3050	3060
*	*	*	*	*	*
TCGGGACCGG GCCGGCGGAT CGGCAACCGC CGAACTCGAT CAACTGCGCG GCAGCGGCCT					
AGCCCTGGCC CGGCCGCCTA GCCGTTGGCG GCTTGAGCTA GTTGACGCCG CGTCGCCGGA					
3070	3080	3090	3100	3110	3120
*	*	*	*	*	*
GCTCTCGCTG TCCATTCCCC CGGCATATGG CGGCTGGGGC GCGCACTGGC CAACGACTCT					
CGAGAGCGAC AGGTAAGGGC GGCGTATAACC GCCGACCCCG CGGCTGACCG GTTGCTGAGA					
3130	3140	3150	3160	3170	3180
*	*	*	*	*	*
GGAAGTTATC CGCGAACGTCG CAACGGTGGG CGGATCGCTG GCGCATCTAT TCAGGCTACCA					
CCTTCAATAG GCGCTTCAGC GTTGCACCT GCCTAGCGAC CGCGTAGATA AGCCGATGGT					
3190	3200	3210	3220	3230	3240
*	*	*	*	*	*
CCTCGGCTGC GTACCGATGTA TCGAGCTGTT CGGCTCGGCG CCACAAAAGG AACGGCTGTA					
GGAGCCGACG CATGGCTACT AGCTCGACAA GCCGAGCCGC GGTGTTTCC TTGCGACAT					
3250	3260	3270	3280	3290	3300
*	*	*	*	*	*
CCGCCAGATC GCAAGCCATG ATTGGCGGGT CGGGAATGCG TCGAGCGAAA ACAACAGCCA					
GGCGGTCTAG CGTTCGGTAC TAACCGCCCA GCCCTAACGC AGCTCGCTT TGTTGTCGGT					
3310	3320	3330	3340	3350	3360
*	*	*	*	*	*
CGTGCTCGAG TGGAAAGCTTG CGGCCACCGC CGTCGATGAT GGCGGGTTCG TCCTCAACGG					
GCACGAGCTC ACCTTCGAAC GGCGGTGGCG CGAGCTACTA CCGCCCAAGC AGGAGTTGCC					
3370	3380	3390	3400	3410	3420
*	*	*	*	*	*
CGCGAACGAC TTCTGCAGCG GCGCCAAAAG CTCCGACCTG CTCATCGTGT TCAGGCGTGAT					
GCGCTTCGTG AAGACGTCGC CGCGGTTTTC GAGGCTGGAC GAGTAGCACA AGCCGCACTA					
3430	3440	3450	3460	3470	3480
*	*	*	*	*	*
CCAGGACGAA TCCCCCTGC GCGCGCGAT CATCACCGCG GTCATTCCCA CCGACCGGGC					
GGTCCTGCTT AGGGGGGACG CGCCGCGCTA GTAGTGGCGC CAGTAAGGGT GGCTGGCCCG					
3490	3500	3510	3520	3530	3540
*	*	*	*	*	*
CGGTGTTCAAG ATCAATGACG ACTGGCGCGC AATCGGGATG CGCCAGACCG ACAGCGGCAG					
GCCACAAGTC TAGTTACTGC TGACCGCGCG TTAGCCCTAC GCGGTCTGGC TGTCGCCGTC					
3550	3560	3570	3580	3590	3600
*	*	*	*	*	*
CGCCGAATTG CGCGACGTCC GAGTCTACCC AGACGAGATC TTGGGGGCAC CAAACTCAGT					
GCGGCTTAAA GCGCTGCAGG CTCAGATGGG TCTGCTCTAG AACCCCCGTG GTTTGAGTCA					

FIGURE 6F

Sphingomonas dsz sequence (page 7)

3610	3620	3630	3640	3650	3660
*	*	*	*	*	*
CGTTGAGGCG TTCGTGACAA GCAACC CGGG CAGCCT GTGG ACGCCGGCGA TTTCAGTCGAT					
GCAACTCCGC AAGCACTGTT CGTTGGCGCC GTCGGACACC TGCGGCCGCT AAGTCAGCTA					
3670	3680	3690	3700	3710	3720
*	*	*	*	*	*
CTTCTCGAAC GTTTATCTGG GGCTCGCGCG TGGCGCGCTC GAGGCGGGCAG CGGATTACAC					
GAAGAGCTTG CAAATAGACC CCGAGCGCGC ACCGCGCGAG CTCCGCGCTC GCCTAATGTG					
3730	3740	3750	3760	3770	3780
*	*	*	*	*	*
CCGGACCCAG AGCCGCCCT GGACACCCCGC CGGCGTGGCG AAGGCGACAG AGGATCCCCA					
GGCCTGGGTC TCGGCGGGGA CCTGTGGCG GCGCACCGC TTCCGCTGTC TCCTAGGGGT					
3790	3800	3810	3820	3830	3840
*	*	*	*	*	*
CATCATCGCC ACCTACGGTG AACTGGCGAT CGCGCTCCAG GGCGCCGAGG CGGCCGCGCG					
GTAGTAGCGG TGGATGCCAC TTGACCGCTA GCGCGAGGTC CCGCGGGCTCC GCCGGCGCGC					
3850	3860	3870	3880	3890	3900
*	*	*	*	*	*
CGAGGTCGCG GCCCTGTTGC AACAGGCGTG GGACAAGGGC GATGCGGTGA CGCCCGAAGA					
GCTCCAGCGC CGGGACAAACG TTGTCCGCAC CCTGTTCCCG CTACGCCACT GCAGGCTTCT					
3910	3920	3930	3940	3950	3960
*	*	*	*	*	*
GGCGGGCCAG CTGATGGTGA AGGTTTCGGG TGTGAAGGCC CTCTCGACGA AGGCCGCCCT					
CGCGCCGGTC GACTACCACT TCCAAAGCCC ACACCTCCGG GAGAGCTGCT TCCGGCGGGA					
3970	3980	3990	4000	4010	4020
*	*	*	*	*	*
CGACATCACC AGCCGTATTT TCGAGACAAC GGGCTCGCGA TCGACGCATC CCAGATAACGG					
GCTGTAGTGG TCGGCATAAA AGCTCTGTTG CCCGAGCGCT AGCTGCGTAG GGTCTATGCC					
4030	4040	4050	4060	4070	4080
*	*	*	*	*	*
ATTCGATCGG TTCTGGCGTA ACATCCGGAC TCATACGCTG CACGATCCGG TATCGTATAA					
TAAGCTAGCC AAGACCGCAT TGTAGGCCTG AGTATGCGAC GTGCTAGGCC ATAGCATATT					
4090	4100	4110	4120	4130	4140
*	*	*	*	*	*
AATCGTCGAT GTGGGAACT ACACGCTCAA CGGGACATTC CCGGTTCCCG GATTACGTC					
TTAGCGCTA CACCCCTTGA TGTGCGAGTT GCCCTGTAAG GGCCAAGGGC CTAAATGCAG					

ATGA
TACT

FIGURE 6G

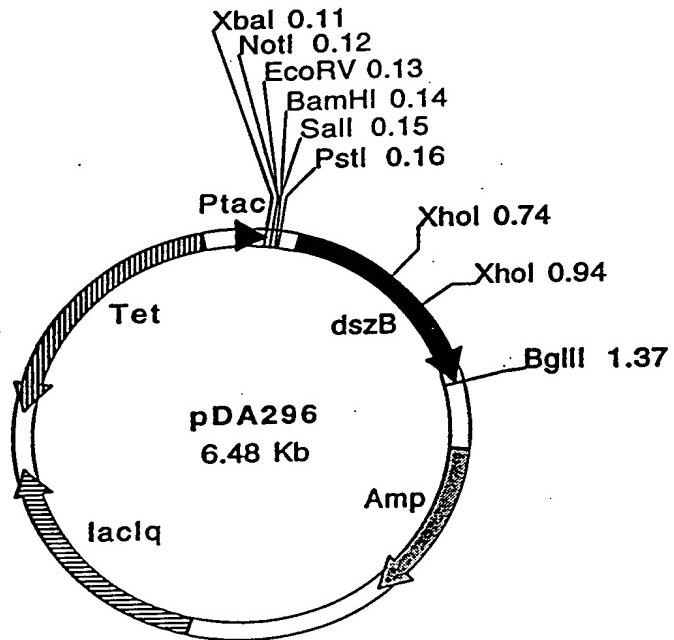


FIGURE 7

DszA (S) 1 MTDPRQLHLAGFFCAGNVTHAHGAWRHADDSNGFLTKEYYQQIARTLERG 50
 ||:||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DszA (R) 1 MTQQRQMHLAGFFSAGNVTHAHGAWRHTDASNDFLSGKYYQHIARTLERG 50

DszA (S) 51 KFDLLFLPDALAVWDSYGDNLETGLRYGGQGAVMLEPGV рIAAMASVTEH 100
 |||||:|||||:|||||:|||: .||||| |||: |||: |||: .|||:
DszA (R) 51 KFDLLFLPDGLAVEDSYGDNLDGTGVLGGQGAVALEPASVVATMAAVTEH 100

DszA (S) 101 LGLGATISTYYPPYHVARVVASLDQLSSGRVSWNVVTSLSNAEARNFGF 150
 |||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DszA (R) 101 LGLGATISATYYPPYHVARVFATLDQLSGGRVSWNVVTSLNDAEARNFGI 150

DszA (S) 151 DEHLDHDARYDRADEFLEVVRKLWNSWRDALTLKDATGQFADPAKVRYI 200
 ::|||:|||||:|||||:|||:|||||:|||||:|||||:|||:
DszA (R) 151 NQHLEHDARYDRADEFLEAVKKLWNSWDEDALVLDKAAGVFADPAKVHYV 200

DszA (S) 201 DHRGEWLNVRGPLQVPRSPQGEPVILQAGLSARGKRFAGRWADAVFTISP 250
 |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DszA (R) 201 DHHGEWLNVRGPLQVPRSPQGEPVILQAGLSPRGRRFAGKWAЕAVFSLAP 250

DszA (S) 251 NLDIMQATYRDIKAQVEAGRDPEQVKVFAAVMPILGETEAIARQRLEYI 300
 |||:|||||:|||||:|||||:|||||:|||||:|||||:
DszA (R) 251 NLEVMQATYQGIKAEVDAAGRDPDKIFTAVMPVLGESQAVAQERLEYL 300

DszA (S) 301 NSLVHPEVGLSTLSSHGVNLADYSLDTPLTEVLGDLAQRNVPTQLGMFA 350
 |||||:|||||:|||||:|||:|||:|||:|||:|||:
DszA (R) 301 NSLVHPEVGLSTLSSHTGINLAAYPLDTPIKDILRDLQDRNVPTQLHMFA 350

DszA (S) 351 RMLQAETLTVGEMGRRYGANVGFPQWAGTREQIADLIEIHFKAGGADGF 400
 :|||:|||||:|||||:|||||:|||||:
DszA (R) 351 AATHSEELTLAEMGRRYGTNVGFVPQWAGTGEQIADELIRHFEGGAADGF 400

DszA (S) 401 IIISPAFLPGSYEEFVDQVVPILQHRLFRDYEGRTLRSHLGLREPAYLG 450
 |||||:|||||:|||||:|||:|||:|||:
DszA (R) 401 IIISPAFLPGSYDEFVDQVVPVLQDRGYFRTEYQGNTLRDHGLRVPQLQG 450

DszA (S) 451 EYA 453
 :
DszA (R) 451 QPS 453

FIGURE 8

FIGURE 9

FIGURE 10

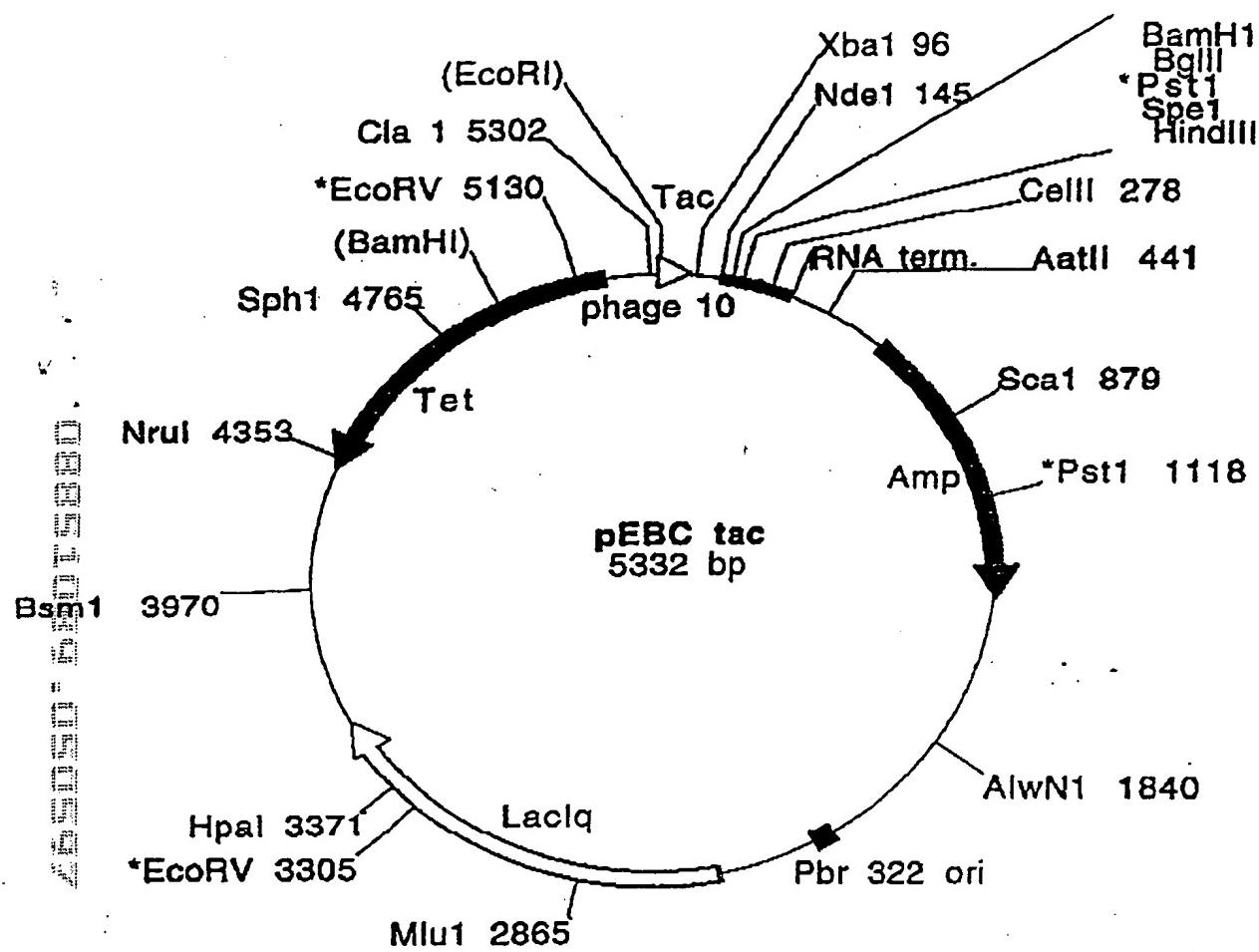


FIGURE 11